

## **C.7 FACILITY SHUTDOWN AND DISMANTLEMENT**

This section states the requirements for facility shutdown and dismantlement at the FEMP, including the decontamination and containerization for shipment of waste and debris generated from the remediation of the Silo 3 waste.

### **C.7.1 Facility Shutdown**

The primary purpose of facility shutdown is to isolate all utilities to the facilities, remove gross quantities of hold-up from existing equipment, ductwork, pipes, and sumps, and perform gross decontamination to prepare for dismantlement. The need to decontaminate the facility to the unrestricted release criteria established in Table C.7-2 will be evaluated based on the Contractor's desire to release the equipment for unrestricted use or to ship the equipment back to their facility as radioactive material. The Contractor shall submit a Facility Shutdown Work Plan as described in Section C.7.3.1.

#### **C.7.1.1 Isolation of Utilities**

The Contractor shall isolate all utilities including, but not limited to, electric power, steam, water, and compressed air from the facility. The Contractor shall include an Energy Isolation Plan within the Facility Shutdown Plan for FDF approval which describes when, where, and how, the utilities shall be isolated.

Utilities shall be safely disconnected outside the facility early in the facility shutdown process, by physically cutting, air gapping, and tagging the lines. The Contractor shall remove all grounding conductors to grade level. The Contractor shall conduct a survey to verify that all utilities are capped and/or controlled and notify FDF in writing of the completion of the utilities isolation.

#### **C.7.1.2 Establish Temporary Utilities**

The Contractor shall be responsible for the following:

- ! The Contractor shall extend the power from the point source location or provide portable generators;
- ! All electrical appurtenances required for temporary power shall be in accordance with the NEC;
- ! Temporary heating or cooling, if needed, shall be provided by the Contractor. All portable heaters shall be UL listed or American Gas Association (AGA) certified for their intended use and not modified for other applications. Ventilation for fuel-fired heaters and adequate clearance to combustible materials, surfaces, and furnishings shall be provided according to manufacturer's recommendations. Use of Liquid Propane Gas (LPG) gas-fired heaters shall be approved by the FDF Fire Protection group. All portable continuous running of gas-fired heating systems require 24-hour coverage by

the Contractor; and

- ! The Contractor shall extend the water from the point source location to support operations.

#### **C.7.1.3 Removal of Hold-up Material**

The interior of all equipment, piping, ductwork, tanks, and sumps shall be assessed to determine whether they contain loose and/or visible hold-up material. Loose is defined as material that is considered releasable through a credible accident. Visible hold-up material is defined in Section C.7.2.2.1. If the item contains loose or visible material, the material shall be removed in accordance with FDF-approved Safe Work Plans and packaged in accordance with the MSCC, Table C.7-3.

#### **C.7.1.4 Gross Decontamination**

The Contractor shall perform gross decontamination of the remaining equipment and the interior of the treatment facility. Gross decontamination is defined as general housekeeping to remove contaminated debris, vacuum loose dust, wet wipe equipment, ductwork, piping, and the interior of the structure walls, and remove loose, visible residues.

### **C.7.2 Dismantlement**

This section states the requirements for debris/waste handling criteria; removing/fixing radiological contamination; and decontamination of Contractor-provided tools, equipment and materials; structural steel dismantlements; equipment dismantlement; interior dismantlement; and ventilation and containment.

#### **C.7.2.1 Debris/Waste Handling Criteria**

This section provides the requirements for handling and containerizing debris/waste generated during the dismantlement of processing and support facilities. Debris/waste will be segregated into established categories and containerized accordingly. This includes, but is not limited to, the following:

- ! Segregation of debris/waste;
- ! Containerization of debris/waste;
- ! Movement of containers within the construction zone; and
- ! Weighing and tagging containers.

##### **C.7.2.1.1 Project Conditions**

FDF will provide the Contractor with categories of debris/waste as indicated in Table C.7-3. The Contractor shall package waste to meet the requirements of the MSCC using

FDF/FAT&LC labor.

Generation of additional debris/waste shall be minimized by unpacking equipment and material prior to entering the Controlled Area whenever possible. The Contractor shall not bring any hazardous material to the construction zone unless prior approval is received from FDF. Alternatives to hazardous materials shall be used whenever possible.

#### **C.7.2.1.2 Contractor Equipment**

The Contractor shall supply all equipment required to move containers, between and within the Silo 3 work zone area and construction zone, as well as all equipment to load containers.

#### **C.7.2.1.3 Materials**

FDF will provide appropriate containers to support facility shutdown and dismantlement activities, as identified on Table C.7-1. These containers include, but are not limited to, the following:

**Table C.7-1 Containers**

<b>Container Designation</b>	<b>Nominal Exterior Dimensions (HxWxL)</b>	<b>Maximum Gross Weight (lbs)</b>
Large white metal box (LMB) (top load)	8'x8'x20'	42,000
Small metal box	3'x4'x6'	9,000
55-gallon drum with lid	---	882
Roll-off boxes (ROB)	6'x8'x22'	42,000

The Contractor shall supply fiber-reinforced polyethylene or polyester sheeting approved for outdoor storage:

- ! Color, yellow;
- ! Minimum thickness of six-mils;
- ! Ultraviolet resistant; and
- ! As manufactured by Griffolyn, Herculite or equal.

FDF will deliver empty ("prepped" if required) containers, pallets (possibly radiologically-contaminated), and miscellaneous materials, as required, to the container staging area.

The Contractor shall furnish 8 ½" x 11" weatherproof removable tags.

FDF will furnish the pallets and dunnage as required for movement of equipment or material.

The Contractor shall furnish the fiber-reinforced sheeting to prevent migration of radioactive contamination during material movement.

### **Preparation**

The Contractor shall establish and maintain its container and interim staging area(s) in the physical boundary to define the area(s). The staging area(s) shall be used as a temporary storage area for empty and full debris/waste containers.

areas and routes of access, in the Silo 3 work zone, to accommodate container handling requirements.

The Contractor shall identify a satellite accumulation area or an approved RCRA storage area unauthorized entry, controlled by FDF, and managed in accordance with applicable RCRA requirements. Control of the area shall be the responsibility of the Contractor with oversight by FDF. Size and location of the accumulation area shall be coordinated with FDF.

boxes, and large metal boxes as follows:

!

- ! Remove any freestanding water; and  
Replace lid or tarp on the box and secure with clamping devices, pins, or other FDF-approved method.

#### **C.7.2.1.5 Application**

segregating debris/waste; loading, weighing, securing containers; tagging for on-site movement; and moving containers back to the staging area. The Contractor shall use Table

limiting the amount of material brought on site.

Equipment or material requiring movement outside the enclosed building to be containerized or

cannot be attained, the material may be encapsulated or wrapped in fiber-reinforced sheeting and sealed prior to movement to prevent the migration of radioactive contamination during

Pallets shall be managed by the Contractor as follows:

- ! Place fiber-reinforced sheeting over pallet, position material on pallet, and wrap the sheeting over material;
- ! Secure fiber-reinforced sheeting over material to prevent migration of contamination; and
- ! Secure material to pallet with vinyl or metal bonding material.

#### **C.7.2.1.6 Loading Containers**

The Contractor shall:

- ! Provide a debris/waste handling supervisor to supervise operations. The supervisor will be required to complete, FDF conducted, disposal facility training;
- ! Segregate and containerize all debris/waste according to the categories defined in Table C.7-3. Should a debris/waste stream be discovered that is not on the MSCC, then handling this debris/waste shall stop. The Contractor shall contact FDF for further direction;
- ! Upon receipt of containers, perform a visual inspection to ensure the containers do not hold freestanding water (FDF will remove any water found). If freestanding water accumulates in the containers after the Contractor accepts the containers, the Contractor shall remove the water by either draining the container or using absorbent material. After movement of appropriate containers to the loading area, remove the container lid and place in a designated location to prevent damage;
- ! Fill containers, boxes, and drums such that the interior volume is as efficiently and compactly loaded as practical, up to the maximum gross weight limit of the container. When applicable, the Contractor shall use batt insulation to fill void space in shipping containers. Any container exceeding maximum allowable gross weight shall have contents removed, as required, to lower the weight to an acceptable range. Contents shall be prepared for containerization so as to minimize load shifting or damage during movement;
- ! Ensure that debris/waste to be containerized is not on the "Prohibited Materials List" identified for the project. A walkthrough of the process, by FDF and Contractor personnel, shall be conducted to identify all prohibited items associated with the project. This list shall be displayed in the containerization area or on each container. The Contractor shall notify FDF if any of the prohibited materials are identified for further material handling directions. Prohibited items include, but are not limited to, the following:

#### **Prohibited Materials List**

Compressed gases (e.g., unpunctured aerosol cans)  
Explosives  
Free liquids  
Fine particulates (respirable fines)  
Hazardous waste  
Corrosive materials  
Etiologic agents  
Chelating agents

- ! Ensure that proper waste stream and waste container documentation has been completed (e.g., MEFs, 65-cards, lot codes, and inventory numbers);
- ! Notify FDF at least 24 hours in advance of loading containers;
- ! Visually check debris/waste for free liquid prior to loading. If free liquid is present, notify FDF. The Contractor shall take appropriate action to remove or absorb free liquid; and
- ! Provide and install weatherproof removable tags on each debris/waste container prior to moving to the staging area. Tags shall identify container contents by debris/waste category specified in the MSCC and the debris/waste's building of origin. For Category J (Table C.7-3, MSCC), an exact description of the contents shall be required.

#### **C.7.2.1.7 Security and Movement of Containers**

The Contractor shall move containers to the specific task location from the staging area.

The Contractor shall ensure that the lid, doors, or tarps on unfilled debris/waste containers are secured when no containerization is in progress to prevent addition of unknown materials and release of container contents. Containers must be weather protected when lid is not secured, to prevent entry of snow and rain and release of container contents.

The Contractor shall secure full containers as follows:

- ! Drums shall be secured as follows:
  - Place lid on drum, ensuring that gasket is seated to maintain a tight seal.
  - Install bolt-type lock ring on lid and torque to  $45 \pm 5$  foot-pounds.
  - Drums shall be strapped together on pallets.
- ! Top-loading metal boxes (large and small) shall be secured as follows:
  - Inspect gasket for damage and repair, if required.
  - Place gasket and lid on the box and secure with clamping device or pins.

! ROB's shall be secured as follows:

- Cover roll-off boxes with tarp or steel lid.
- Secure tarp (with straps) or steel lid (with clamping device or pins).
- Secure all gate chains.

! Ensure that containers have not been damaged during loading; and

! Return full, secured containers to the staging area.

FDF will oversee the final securing of full containers by the Contractor for either on-site disposal in the OSDF, off-site shipment for disposal of radioactive waste at the an appropriately licensed facility, or disposal of nonradioactive, noncontaminated waste at a properly permitted disposal facility.

When applicable, ROB's that contain bulk storable debris/waste will be emptied by FDF at a bulk storage location(s) and returned to the staging area for reuse.

The Contractor shall decontaminate waste containers, equipment, tools, etc., prior to exiting the construction zone or staging area as necessary in accordance with Section C.7.2.3.

Multi-level Floor Demolition Debris Movement: If the Contractor chooses to stage any demolished material on a floor other than the ground floor of a multi-floored structure or an equipment platform, an engineering analysis shall be required. The Contractor shall perform the analysis to verify the loading capacity of said floor and submit the analysis to FDF signed and stamped by a P.E. to ensure that the load capacity is not exceeded.

#### **C.7.2.1.8 Bulk Staging of Debris/Waste**

Some debris may be bulk-staged to permit the most effective handling of the media. In cases where bulk staging is desired, the debris shall be managed to assure minimization of airborne emissions, and staging shall occur to assure control of run-off. This debris shall be staged in a manner to minimize double handling, minimize costs by optimizing container use, and minimize labor associated with maintenance. Debris categories considered for bulk staging within the work zone include Category A, accessible metals.

#### **C.7.2.2 Removing/Fixing Radiological Contamination**

This section describes decontamination of dismantled equipment or structural debris to a level that permits removal of the equipment from a local containment, enclosure, or permits opening the remedial facilities to the environment. This section includes, but is not limited to:

- ! Decontaminating low-level uranium and thorium-contaminated equipment, materials, structural members, and/or buildings;
- ! Decontaminating RCRA-contaminated equipment and materials;

- ! Controlling and moving effluent produced during the removal and/or fixing of contamination; and
- ! Fixing contamination.

#### **C.7.2.2.1 Project Conditions**

The Contractor shall establish an inspection area to allow FDF to inspect waste materials and perform radiological surveying.

The inspection area shall be arranged such that routine access is prevented by means of fencing and/or barrier tape with appropriate posting to identify that the items contained are being held for survey and the area is off limits to individuals other than FDF/Contractor radiological survey personnel.

Only those items, as listed in Section C.7.2.2.4, that meet the requirements for leaving the local containment or building shall enter the inspection area.

If by visual inspection, hold-up material is found (solid or liquid), FDF shall be notified immediately. If the volume is estimated to be less than one quart, the Contractor shall remove and containerize the hold-up material in accordance with the MSCC. If the material found is estimated to be greater than one quart by volume, activities shall cease on that piece of demolition debris. In consultation with FDF, the Contractor shall remove, manage, and treat hold-up material greater than one quart in volume in accordance with the Contractor's approved Removal of Hold-up Plan (Section C.7.3.1).

#### **C.7.2.2.2 Contractor Equipment**

The Contractor shall supply all material and equipment required to remove and/or fix contamination.

The Contractor shall collect all waste and effluent generated while removing and/or fixing contamination. Effluent shall be containerized in accordance with the requirements listed in Section C.7. The Contractor shall supply all equipment required to control and treat rinseate produced during removal and/or fixation of contaminants in accordance with Section C.5.1.1.3.2..

#### **C.7.2.2.3 Materials**

If stabilizer coatings are employed, they shall be Carboline D3358 or approved equal. Manufacturers may include, but are not limited to: Tnemec Series 6 - Tnemec-Cryl, Sherwin-Williams, or International Protective Coatings.

If nonstrippable coatings are employed, they may include, but are not limited to: Polymeric Barrier System (Bartlett), or an FDF-approved equal.

**C.7.2.2.4 Application**

To remove equipment or debris from a local containment or enclosure or prior to loading into containers, or to containerize outside of an enclosure, or prior to moving to the inspection area, all surfaces shall be free of visible process residues and dry, as determined by FDF. The definition of visible process residues is material on the interior or exterior surfaces of debris that is obvious and that if rubbed, would be easily removed. If an item fails visual inspection, the items shall be deemed a Category C (Process-Related Metals) item and shall either be encapsulated or wrapped in accordance with Section C.7 and containerized, as stated in the MSCC. Dirt, oil, stains, rust, corrosion, and flaking do NOT qualify as visible process material, but shall be considered for contamination control purposes. All equipment, material, and debris shall be considered to be radiologically-contaminated.

**C.7.2.2.4.1 Requirements Common to Both Equipment Decontamination and Structure Decontamination**

Acceptable methods for removing contamination include, but are not limited to: hydro-blasting or steam-cleaning with a minimum of 1,000 psi, sponge blasting, and HEPA vacuuming.

Fixing contaminants shall be required, if contamination levels have not been met and decontamination has been attempted at least once. Acceptable methods for fixing contamination, which is not readily removed by the above identified methods include, but are not limited to; stabilizer coatings and nonstrippable coatings.

If stabilizer or nonstrippable coatings are used as fixatives, they shall meet the requirements of Section C.7.2.2.3

The Contractor shall take precautions to prevent the breaching of stabilizer coatings applied to equipment or structure. If a stabilizer coating is breached after application, during activities leading up to, but not including, structural demolition, the Contractor shall reseal the breached areas.

**C.7.2.2.4.2 Requirements Specific to Equipment Decontamination and Removal From a Building Enclosure or Local Containment**

The Contractor shall remove contamination on equipment, materials, or debris in accordance with Section C.7 and move equipment to an inspection area.

Thorium-contaminated items cannot be released from the building enclosure or local containment areas unless surveyed for thorium-specific release limits (Section J.3.4). Items taken from these areas shall be either decontaminated, wrapped and brought directly to containers labeled as containing thorium-contaminated items (not for repackaging), or containerized prior to removal from the enclosure as determined by the Contractor.

**C.7.2.2.4.3 Requirements Specific to Structure Decontamination**

Prior to opening a building to the environment by removing the exterior siding or demolishing a building, the Contractor shall remove and/or fix radiological contamination on all surfaces within the facility until the detected radioactivity levels are below the criteria as defined in Section J.3.4.

FDF may perform a radiological release survey to ensure the radioactivity criteria are met.

Down posting of thorium-contaminated areas requires that contamination levels meet the thorium-specific release limits.

If hydro-blasting or steam cleaning is employed, the Contractor shall:

- ! Seal floor cracks/seams and building cracks using sealants to protect the environment from migration of contaminants through slabs; and
- ! Contain effluents to the building interior and subsequently to collection systems.

The Contractor may use any existing building floor sumps for effluent collection.

The Contractor shall take precautions to prevent the spread of contamination from other more contaminated areas of the facility.

#### **C.7.2.2.4.4 Rinseate/Effluent Handling**

All effluents and sludges from decontamination activities shall be collected in separate containers from other effluents and sludges until after sampling and analysis. Contractor shall perform all effluent and sludge sampling and analysis and provide the necessary information to FDF for proper evaluation. Approval to commingle the effluents and sludges must be provided by FDF. The collection containers shall meet the following requirements:

- ! For the washing of equipment/material or a structure containing Uranium and/or Thorium contamination, the Contractor shall supply effluent storage tanks with a minimum storage capacity to allow 30 calendar days storage without impacting operations;
- ! Effluent tanks shall have secondary containment with a minimum of ten percent of the overall effluent tank capacity housed and not less than the volume of one full tank, whichever is greater; and
- ! Upon approval from FDF, the Contractor shall empty the contents of the effluent storage tanks and transport the effluent to the FEMP AWWT.

#### **C.7.2.3 Decontamination of Contractor-Provided Tools, Equipment, and Material**

This section provides preventative measures for and decontamination of Contractor-provided tools, equipment (including vehicles), and material to a level that permits removal from an enclosure/work zone, restricted reuse, or unrestricted release. This section includes, but is not limited to:

- ! Preventative measures/waste minimization;
- ! Decontamination area requirements;

- ! Methods of decontamination activities;
- ! Control of effluent and waste management activities; and
- ! Relocation, reuse, and release activities for tools, equipment, and material.

#### **C.7.2.3.1 Project Conditions and Requirements**

The Contractor shall establish a holding area to allow FDF to perform tool and equipment radiological surveying. The holding area shall be arranged such that routine access is prevented by means of fencing and/or barrier tape with appropriate posting to identify that the items contained are being held for survey and the area is off limits to individuals other than FDF/Contractor radiological survey personnel. Only those items which meet the requirements (Section C.7.2.2.4) for leaving the work zone shall enter the inspection area.

The Contractor shall provide the extensive dismantlement and an aggressive decontamination effort required to achieve unrestricted release of items that have been contaminated.

Hand and portable tools used in contaminated areas for performance of the contract shall be considered expendable.

#### **C.7.2.3.2 Contractor-Provided Tools and Equipment**

The Contractor shall deliver approved decontamination and contamination-controlling agent materials in original, new, and unopened containers bearing the manufacturer's label, and the following information:

- ! Name or title of material;
- ! Manufacturer's stock number and date of manufacture;
- ! Manufacturer's name; and
- ! Material Safety Data Sheet.

To meet the ALARA goal for tools, equipment, and materials, the Contractor shall control residual contamination to the extent that there is no detectable contamination on items that were free of contamination prior to use. When previously-contaminated items are no longer required for use, there shall be no increase in the level of contamination. This includes, but is not limited to, the following:

- ! Protective measures prior to use of items;
- ! Preventative measures while items are being used; and
- ! Decontamination upon completion of work activities.

All Contractor-furnished tools, vehicles, equipment, and material shall be inspected for radioactive contamination by FDF radiological control personnel prior to initial entry and upon removal from the radiological control area. FDF will supply all survey instrumentation used to inspect for radioactive contamination.

The Contractor shall supply all equipment required to remove and/or control contamination.

The Contractor shall supply all equipment required to control, filter, and remove effluent

#### **C.7.2.3.3 Preventing or Minimizing Contamination**

and vehicles to radioactive contamination. Equipment shall be located in the area with the least potential for contamination. For example, locate equipment in a noncontaminated area

(e.g., air compressors, high pressure washers, welders, generators, oxy-acetylene cylinders, and battery chargers).

decontamination and disassembly that may be required for decontamination. Use of unrestricted release items shall incorporate appropriate precautions, prior to and during use, to

! Internal combustion equipment subject to contamination should have prefilters or a

! High volume air handling equipment such as blowers, compressors, etc. shall have a level radioactivity. Vents for air cooling shall be covered in a similar manner;

! the FEMP (e.g., fork lifts) except where only electrically-driven equipment is available;

! minimize the potential for contamination (e.g., coating the buckets of man lifts or other walking/standing surfaces). In addition, all openings on equipment, tools, or vehicles covered and protected; and

! tools and equipment from overspray. In addition, the Contractor shall ensure that the sealant and/or coating can be readily removed during facility shutdown activities, if

#### **C.7.2.3.4 Decontamination Area Requirements**

indoor debris washing location.

The following are examples of options for establishing outdoor decontamination areas:

Use an existing pad; and

! Construct a temporary containment area:

- Containment must have a bermed perimeter to ensure run-off control;
- An example of acceptable containment is Herculite® with sandbag underlayment perimeters on a nonpenetrating grade;
- Containment must be sized for equipment and maintain its integrity; and
- Containment must provide controls for the generation of secondary waste.

#### **C.7.2.3.5 Methods of Decontamination Activities**

If decontamination becomes necessary, the Contractor shall, at a minimum, use the following, if applicable:

! Dry cleaning;

! Steam cleaning;

! High pressure hot water washing (may be used in conjunction with abrasive techniques and approved decontamination agents) with a minimum of 1,000 psi and HEPA vacuuming;

! When selecting a decontamination technique other than those identified above, consideration shall be given to those technologies that minimize radiological airborne emissions, secondary wastes, and tool or equipment damage; and

! The contaminated components are subject to the cleaning and handling requirements of Section C.7.2.2. The contaminated components shall be managed and handled per Section C.7.2.1 and the MSCC subsequent to the cleaning as directed by FDF. Actual disposal of the contaminated components will be performed by FDF at the Contractor's expense, in accordance with Section H.60.

#### **C.7.2.3.6 Control of Effluent and Waste Management Activities**

The Contractor shall control and collect all waste and effluent generated while removing and/or fixing contamination in accordance with Sections C.7.2.1 and C.7.2.2. Effluent shall either be pumped to an existing approved sump or to an effluent holding tank. Management of wastes generated during decontamination activities shall be in accordance with Section C.7.2.1, Section C.7.2.2.4.4, and Table C.7-3.

#### **C.7.2.3.7 Relocation, Reuse, and Release of Tools, Equipment, and Material**

The Contractor shall perform all necessary decontamination activities required so that surface contamination limits identified in Table C.7-2 are not exceeded. FDF will perform final verification surveying.

The Contractor shall provide a minimum of 24 hours prior notice to FDF of intent to remove

Contractor's tools and equipment from the work area.

#### **C.7.2.3.7.1 Release of Tools, Equipment, and Material from Contamination Areas to the Controlled Area**

If removable contamination in excess of the limits of Table C.7-2 is present on the tools, equipment or material, then the items shall remain in the contamination area for decontamination or the items shall be contained such that no contaminated surfaces of the item are accessible without disassembling the equipment or breaching the containment.

Examples of acceptable containment include plastic wrapping, yellow Herculite® wrapping, or a sealable hard container. However, the containment used must be adequate to maintain its integrity considering the weather, conditions of storage, and the methods or conditions of transport.

If removable contamination is below release criteria limits, but the total (fixed plus removable) limit is exceeded, the item may be labeled or identified as radioactive material by FDF and released to the controlled area.

#### **C.7.2.3.7.2 Unrestricted Release Criteria**

All items are considered potentially contaminated if they have been used or stored in controlled areas that could contain loose radioactive contamination.

Prior to being released from the controlled area, all items will be surveyed by FDF to determine whether both removable and total surface contamination (including contamination on and under any coating) do not exceed the limits given in Table C.7-2, meets the requirements of RP-0009 Radiological Requirements for the Release of Materials at the Fernald Environmental Management Project (Attachment J.4.105), and that the item has been subjected to the ALARA process (Section J.3.4).

Upon approval from FDF, the Contractor shall remove the tools, equipment, and/or materials off-site within eight hours.

#### **C.7.2.3.7.3 Tools and Equipment With Detectable Radioactivity**

Tools and equipment with detectable radioactivity may be released with the approval of a FDF Material Release Evaluator (MRE). The following criteria shall be met:

- ! Residual radioactivity shall be at or below the unrestricted release limits identified in Table C.7-2;
- ! All areas shall be readily accessible for residual radioactivity survey, including proper surface counting geometry to allow for accurate quantification. Items with inaccessible areas that are likely to be contaminated, but are of such size, construction, or location

as to make them inaccessible for survey, shall be assumed to exceed the limits for release. The item shall either be disassembled to permit an adequate survey to certify that internal contamination is at or below the limits of Table C.7-2 or well-documented process knowledge can be applied to provide confidence that contamination in inaccessible areas is not probable. In evaluating the potential for contamination in inaccessible areas, consideration shall be given to where the item was used on-site and preventative measures taken prior to use (such as coverings, wrappings, air intake filters, etc.); and

- ! The decontamination effort performed was such that the residual levels of radioactivity are ALARA and further significant reduction in radioactivity would require unreasonable efforts.

#### **C.7.2.3.7.4 Release to the Contractor's Off-site Licensed Facility**

If the Contractor possesses the appropriate NRC license to receive, possess, use, and transfer the equipment, tools, material, or vehicles with radioactive contamination, the Contractor may elect to remove such items from the site in lieu of decontamination. The Contractor shall comply with all federal, state, and local regulations during the packaging, shipping, and receipt of the equipment. The Contractor shall submit a copy of the license and applicable procedures to FDF for compliance review prior to removal of the contaminated equipment. A copy of all Bills of Lading shall be submitted to FDF prior to shipment.

The Contractor shall provide 24 hours notice to FDF prior to shipping radioactive tools, equipment, and/or material.

#### **C.7.2.3.7.5 Unsuccessful/Impractical Contractor Decontamination**

If FDF determines that the Contractor has implemented the requirements of Section C.7 and the Safe Work Plan and the Contractor's decontamination efforts are unsuccessful or decontamination is not practical, then Section H.60 applies.

Decontamination may be considered impractical for nonexpendable items that are integral parts of equipment and not readily replaceable, such as porous materials (e.g., wood and fiberglass), wire rope, chains, brushes, items with finned surfaces, and similar items where contamination may be embedded within the material configuration matrix. These types of items shall not be released if detectable contamination is identified on the surface.

All tools, material, vehicles and equipment accepted by FDF for disposition must have been cleaned to meet the visual inspection requirements defined in Section C.7.2.2 and handled as defined in Section C.7.2.1 and the MSCC (Table C.7-3).

#### **C.7.2.4 Structural Steel Dismantlement**

This section provides the requirements for dismantlement and containerization of structural steel, miscellaneous steel, and metal siding/roofing.

### **Materials**

Nonwoven Geotextile Fabric:

- ! Trevira Spunbond 1120 by Hoechst Celanese Corp.;
- ! ADS 600 by Advanced Drainage Systems, Inc.; and
- ! Equal products manufactured by others will be acceptable.

Surfactants:

- ! Childers CP-225 CHIL-SORB.;
- ! Expert Environmental Products;
- ! International Protective Coatings Corp; and
- !

#### **C.7.2.4.2 Preparation**

been established.

Steel and siding shall have contamination removed, or removed and fixed, prior to exposing

#### **C.7.2.4.3 Application**

the largest extent possible.

The roof deck and roofing material, panels, and concrete floor deck shall also be tripped with

The Contractor shall dismantle, shear, and segregate the structural steel to maximize accessible surfaces.

The Contractor shall shear the steel (beams, joists, purlins, etc.) as close to the joints (cross members, plates, decking, etc.) as practical to create long, accessible (straight)

#### **NOTE:**

activities. Straight pieces may be difficult to obtain where main structural members are connected to lates, deck, grates, or cross members.

- ! The Contractor shall segregate the structural steel into two categories/piles. The segregation criteria for the steel categories are defined as follows:

Category 1 Structural Steel: Steel allowing access to surfaces for a radiological contamination survey for unrestricted release. Surfaces shall be accessible to a Geiger Mueller pancake probe to allow areas to be surveyed. Category 1 steel includes steel with ends crimped due to sizing (e.g., shearing) operations. Welded and riveted joints that have been in place since original construction are not required to be made accessible. However, brackets or structural members bolted to the superstructure must be removed to allow access for survey.

Category 2 Structural Steel: contains surfaces which cannot be radiologically surveyed.

- ! The Contractor shall minimize bending, twisting, and smashing of the steel during segregation and bulk storage.

Control of fugitive emissions shall be maintained at all times during this removal work to minimize visible dust.

If structural steel is removed in sections, the Contractor shall verify the structural adequacy of the remaining structure by a licensed P.E.

All lifting and rigging required shall be in accordance with Section J.3.3.

All steel columns, anchors, and other projections shall be removed flush with the floor slab or existing grade.

#### **C.7.2.4.4 Special Instructions**

The following items are also included (where applicable) in the sequence of structural steel dismantlement:

- ! The Contractor shall remove all windows, doors and frames (wood and/or steel).
- ! The Contractor shall ensure that louvers, gutters, and roof vents are removed during structural steel dismantlement.
- ! The Contractor shall remove metal siding and roofing in full sheets intact without

**Table C.7-2 Surface Contamination Limits <sup>a</sup>**

<b>Nuclide<sup>f</sup></b>	<b>Fixed Plus Removable</b>		<b>Removable<sup>b,e</sup></b>
	<b>Average<sup>b,c</sup></b>	<b>Maximum<sup>b,d</sup></b>	
U-nat, U-235, U-238, and associated decay products, alpha emitters.	5,000 dpm /100 cm <sup>2</sup>	15,000 dpm /100 cm <sup>2</sup>	1,000 dpm/100 cm <sup>2</sup>
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129.	100 dpm/100 cm <sup>2</sup>	300 dpm/100 cm <sup>2</sup>	20 dpm/100 cm <sup>2</sup>
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133.	1,000 dpm/100 cm <sup>2</sup>	3,000 dpm/100 cm <sup>2</sup>	200 dpm/100 cm <sup>2</sup>
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5,000 dpm /100 cm <sup>2</sup>	15,000 dpm /100 cm <sup>2</sup>	1,000 dpm /100 cm <sup>2</sup>

<sup>a</sup> Where surface contamination by both alpha and beta-gamma emitting nuclides exists, the limits established for alpha and beta-gamma emitting nuclides should apply independently.

<sup>b</sup> As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

<sup>c</sup> Measurements of average contaminant should not be averaged over more than one square meter. For objects of less surface area, the average should be derived for each object.

<sup>d</sup> The maximum contamination level applies to an area of not more than 100 cm<sup>2</sup>.

<sup>e</sup> The amount of removable radioactive material per 100 cm<sup>2</sup> of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

<sup>f</sup> The limits presented for transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, and Ac-227 may be adjusted on a case-by-case basis. Consult with FDF Radiological Control when required to apply these limits for unrestricted release.

cutting or bending the sheets, to the extent feasible.

! All material shall be cut and managed in accordance with the MSCC.

#### **C.7.2.5 Equipment Dismantlement**

This section includes the Contractor's responsibility for removal or dismantlement of equipment from a facility and support systems within or outside a facility.

##### **C.7.2.5.1 Project Conditions**

The Contractor shall remove residual process material (hold-up) from equipment to the maximum extent practical. If additional hold-up is found, FDF shall be notified immediately. If the volume is estimated to be less than one quart, the Contractor shall remove and containerize the hold-up in accordance with the MSCC. If the material found (solid or liquid), is estimated to be greater than one quart by volume, dismantlement activities shall cease on that piece of equipment. In consultation with FDF, the Contractor shall remove, manage, and treat hold-up material greater than one quart in volume in accordance with the Contractor's approved Removal of Hold-up Plan (Section C.7.3.1).

##### **C.7.2.5.2 Equipment**

The Contractor shall supply items such as duct tape, six mil fiber-reinforced sheeting, one-half inch plywood and an approved foam that is not ultraviolet degradable as sealing materials.

The Contractor shall use mechanical means of cutting whenever possible.

The Contractor shall supply all materials required to seal equipment openings, to prevent spillage and/or migration of contaminants, per requirements of Section C.7.

The Contractor shall supply fiber-reinforced polyethylene or polyester material approved for outdoor storage: color, yellow; minimum thickness of six mils; ultraviolet resistant; as manufactured by Griffolyn, Herculite, or equal.

##### **C.7.2.5.3 Application**

All equipment and piping shall be dismantled, cut, and segregated per the requirement of the MSCC.

If methods used for dismantlement generate loose contamination, or if upon dismantlement, loose contamination is discovered, the openings on the equipment shall be sealed. Sealing material shall be sufficiently durable to maintain its integrity during handling, containerization, and exposure to weather. The Contractor shall seal openings after cleaning and after verification inspection by FDF (Section C.7.2.2).

Prior to cutting into tanks or piping where the potential for flammable lining exists, the Contractor shall verify that no lining exists. Should the Contractor find lined pipes or tanks, the

pipes or tanks shall be cut and removed by mechanical means and not be torch cut.

In some cases, equipment may be elevated from the ground by using a structural platform. In these cases, the equipment shall be cut away or disconnected from the platform and lowered to the ground. The dismantlement of this equipment shall be accomplished by shearing and cutting whenever possible. If this is not possible, the equipment shall be dismantled at convenient assembly joints.

Equipment that must be removed in one piece during dismantlement of the building shall meet the criteria in Section C.7.2.2.

If necessary, the equipment shall be rigged in accordance with Section J.3.3.

#### **C.7.2.5.4 Interim Material Storage**

Where removed materials are staged or stored within the facility, the materials shall be stored in designated floor storage areas as described in Section C.7.2.1.

Damaged areas, within facilities identified by the Contractor's Engineering Survey, shall not be used for interim material storage.

#### **C.7.2.6 Interior Dismantlement**

This section includes the Contractor's responsibility for the removal of demolition debris materials within the facility and support items within or outside the facility. Segregation of demolition debris into various waste streams and preparation for containerizing shall include, but not be limited to, the following:

- ! Conduit;
- ! Wire;
- ! Electrical boxes (junction, switch);
- ! Contractors;
- ! Lighting fixtures;
- ! Motor operated valves;
- ! Lighting station;
- ! Raceway and troughs;
- ! Cable trays;
- ! Piping;
- ! Assorted valves, fittings, elbows, gauges, spool pieces, etc.;
- ! Ductwork, plenums, branches, etc.; and
- ! Miscellaneous similar items.

##### **C.7.2.6.1 Project Conditions**

The Contractor shall remove residual process material (hold-up) from the demolition debris to the maximum extent practical. If hold-up is found, FDF shall be notified immediately. If the

volume is estimated to be less than one quart, the Contractor shall remove and containerize the hold-up in accordance with the MSCC. If the material found is estimated to be greater than one quart by volume, dismantlement activities shall cease on that piece of demolition debris.

#### **C.7.2.6.2 Equipment**

Contractor shall supply all tools and equipment required for demolition debris material removal.

All lifting and hoisting equipment required shall be in compliance with Section J.3.3.

The Contractor shall supply all materials required to seal openings, to prevent spillage and/or migration of contaminants, per requirements in Section C.7.

As sealing materials, the Contractor shall supply duct tape, six-mil fiber-reinforced sheeting, one-half inch plywood and an approved foam that is ultraviolet degradable.

A fiber-reinforced polyethylene or polyester sheeting approved for outdoor storage: color, yellow; minimum thickness of six mils; ultraviolet resistant; as manufactured by Griffolyn, Herculite or equal.

#### **C.7.2.6.3 Application**

The Contractor shall remove the ductwork and piping and seal at both ends prior to movement. Prior to removal, the Contractor shall take the necessary actions to preclude spillage of residual material, if encountered. Sealing is not a requirement for conduit.

The Contractor shall use mechanical dismantlement means using BAT, such as mechanical shears, whenever possible.

Uncontrolled dropping of materials is not allowed.

Prior to cutting into tanks or piping where the potential for flammable lining exists, the Contractor shall verify that no lining exists. Should the Contractor find lined pipes or tanks, the tanks shall be cut and removed by mechanical means and shall not be torch-cut.

Hanging light fixtures may be required to be wrapped in plastic to prevent the spread of contamination prior to being cut down.

For management of debris and waste refer to Section C.7.2.1 and the MSCC (Table C.7-3).

#### **C.7.2.6.4 Interim Storage Requirements**

When removed materials are staged or stored within the facility, they shall be placed in areas designated as storage areas as described in Section C.7.2.1.

Damaged areas within facilities identified by the Contractor's Engineering Survey shall not be used for interim material storage.

#### **C.7.2.7 Ventilation and Containment**

This section consists of the work related to the Contractor-supplied ventilation and local containment that is required for radiological contamination purposes. The principle items included in this section are:

- ! Local containment and vestibule design requirements;
- ! Ventilation requirements;
- ! Types of ventilation/local containment design;
- ! Guidance on type of ventilation/local containment applicability; and
- ! Exterior items (such as, dust collectors).

*Local containment* is an enclosure designed to maintain 0.1 inch water gauge negative pressure or six air changes per hour within its structure to prevent fugitive emissions from escaping to the outside environment.

*Vestibule* is an enclosed entrance, a passage, or space that is between the outer door and the interior of the building. The space within the vestibule does not have to be under a negative pressure.

*Enclosure* is the exterior wall of a sealed building.

##### **C.7.2.7.1 Materials**

The Contractor shall provide air cleaning devices, HEPA, and prefilter elements, and all other ventilation accessory equipment for the completion of this project.

The Contractor shall provide polyethylene sheeting as manufactured by Blue Ridge Films Inc., or equal.

##### **C.7.2.7.2 Examination**

All vestibules, equipment, and/or structure containment material shall be noncombustible, or fire- and corrosion-resistant.

Local containment structures shall be designed to be leak-tight and capable of maintaining a negative pressure of at least 0.1 inches water gauge or six air changes per hour. Where applicable, typical design features on various local containments shall include the following standardized features:

- ! Windows and mountings;
- ! Glove ports;

- ! Ease of cleaning;
- ! Adequate interior illumination;
- ! Connections for services lines, conduits, instrument leads, and ductwork;
- ! Six mil polyethylene sheeting;
- ! Pressure differential readouts; and
- ! Attachments for interconnection of local containments.

Where practical, and without penetrating the local containment, all equipment components, not functionally required to operate directly in the presence of radioactive materials, shall be located outside the local containment.

The local containment or vestibule structure external to the building shall be designed to withstand the effects of normal operating conditions and the environment.

#### **C.7.2.7.3 Preparation**

The Contractor shall ensure that all building exterior holes, gaps, or openings are adequately sealed to prevent exhaust of airborne radioactive particulates.

The Contractor shall ensure that all ductwork used is free of dust or dirt before installing it in the ventilation system to prevent premature impingement loading of the prefilters and HEPA filters.

The Contractor shall ensure that all vestibules are large enough to support appropriate storage containers, material handling and dismantling equipment, and debris containerizing operations.

#### **C.7.2.7.4 Erection/Installation/Application**

The Contractor shall block, tie-down, or wheel lock all portable HEPA units.

The Contractor shall ensure HEPA filter and prefilter element replacements occur as indicated in Attachment J.4.75. FDF will perform DOP testing on all HEPA filters prior to their use. All HEPA filter and prefilter element replacements shall be provided by the Contractor.

The following guidelines for localized ventilation and in-place cutting control measures shall be adhered to by the Contractor. The exhaust volume rate shall be at least ten percent of the actual containment air volume per minute. Ventilation provided shall be HEPA filtered. When containments are out-of-doors or border the outdoors, or are to be used for torch-cutting in the size-reduction area, containments must have an airlock for the passage of equipment, personnel, and materials, so the main body of the containment is never directly open to the atmosphere. Other containments shall be maintained such that there are no undesigned holes in the containment and the entrance/exit-way closes sufficiently to meet the air exchange/negative pressure requirements. The following criteria shall be met by the Contractor:

- ! The Contractor shall provide ventilation air in the quantities required to maintain OSHA

air quality limits, all Permissible Exposure Limits (PELs), and all American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs).

! For activities outside of enclosures, HEPA filters with a flexible ventilation duct, shall be used as follows:

- Exhaust rate of the HEPA filters with a flexible ventilation duct shall maintain sufficient airflow capture velocity to prevent entry of fumes into the room. A minimum face velocity of 150 fpm is required.
- Each HEPA filter, with a flexible ventilation duct in the cutting area, should be capable of being isolated by means of control dampers to prevent backflow through a hood when it is not in service.

The Contractor shall ensure that all local containments maintain negative pressures.

The Contractor shall comply with all other requirements for HEPA air filtration devices indicated.

Within an enclosure, the Contractor shall use local ventilation to maintain exposures ALARA.

#### **C.7.2.7.5 Field Quality Assurance**

Final inspection and acceptance of local containments, building enclosures, and vestibule structures shall be obtained from FDF per Section J.3.5.

### **C.7.3 Submittals**

This section identifies and describes the required submittals for facility shutdown and dismantlement tasks. Refer to Figures C.4-1 and C.4-2 for additional submittal information.

#### **C.7.3.1 Facility Shutdown Submittals**

The Contractor shall submit a Facility Shutdown Work Plan for FDF approval. The work plan shall include the following information:

! Energy Isolation Plan:

- Identifies energy source of a specific process, equipment or system;
- Identifies the methods for shutting down, isolating, blocking, and securing the specific process, equipment or system;
- Identifies the methods of verifying isolation;

- Shall be prepared consistent with the latest revision of Safety Performance Requirement No. SPR 2-15 (Attachment J.4.57); and
- Initiated, written, approved, distributed, and maintained in accordance with latest revision of FDF Lockout/Tagout procedure (Attachment J.4.76).

**! Establishing Temporary Utilities**

- State the type and location of temporary Contractor utilities; and
- State the methods the Contractor shall use to tie-in to portable utilities ensuring applicable code compliance.

**! Removal of Hold-up Plan**

- Identify, characterize, locate, and quantify hold-up material;
- Define the system to be worked;
- Identify specific point(s) of entry;
- Identify use of secondary containments at each point where the system is opened;
- Identify final storage locations for containerized waste; and
- Identify removal, management, and treatment procedures for hold-up material estimated to have a volume greater than one quart.

**! Gross Decontamination Plan**

- Methods and equipment for gross decontamination.
- Methods to control, segregate, handle, and minimize secondary waste.
- Product Data - Manufacturer's technical information, including the material to be used, its intended use, and its application instructions;
- Methods to characterize, treat, package, and store secondary waste; and
- Documentation for disposal.

**C.7.3.2 Dismantlement Submittals**

The Contractor shall submit a Dismantlement Work Plan, in accordance with this SOW. The Work Plan subsections and required information for each task is described below.

**C.7.3.2.1 Dismantlement Work Plan, Debris/Waste Handling Subsection**

The Contractor shall provide:

- !** A list of equipment for loading and handling containers, and verifying that the weight capacity of the container(s) is not exceeded;
- !** Information on the method for weighing containers, including catalog cut sheets or

drawings and a calibration and maintenance schedule; and

- ! The Contractor's method for control of wash water run-off; method for loading containers; and location of the waste staging area.

**C.7.3.2.2 Dismantlement Work Plan, Removing/Fixing Radiological Contamination Subsection**

The Contractor shall provide:

- ! A description of the system design for removing and/or fixing contamination, including the methods and equipment for: removing contamination; fixing contamination; and controlling, filtering, and transporting effluent produced during removal and/or fixing activities; and
- ! Product Data: The Contractor shall submit manufacturer's technical information including the material to be used, its intended use, and its application instructions.

**C.7.3.2.3 Dismantlement Work Plan, Decontamination of Contractor Provided Tools, Equipment, and Materials Subsection**

The Contractor shall provide:

- ! The manufacturer's technical information for any decontamination or contamination controlling agents for compliance review prior to use, including:
  - Material to be used;
  - Intended use;
  - Application instructions; and
  - MSDS.
- ! A description of the preventative measures to be employed and the design and construction of the decontamination area.
- ! Methods to be used for decontamination:
  - The methods and equipment for controlling and handling effluent and/or secondary waste produced during decontamination activities; and
  - Plans for relocating, reusing, or releasing tools and equipment.

**C.7.3.2.4 Dismantlement Work Plan, Structural Steel Dismantlement Subsection**

The Contractor shall provide:

- ! Detailed sequence of dismantlement, including equipment to be used;
- ! Methods for contaminant control, including fugitive emissions during cutting;
- ! Calculations to verify the structural integrity of the partially dismantled structure must bear the stamp of a P.E. registered in the State of Ohio; and
- ! Description of plans for personnel tie-offs, use of pick boards and walking on or near roof purlins/girders.

**C.7.3.2.5 Dismantlement Work Plan, Equipment Dismantlement and Interior Dismantlement Subsections**

The Contractor shall provide:

- ! Sequence and method of dismantlement;
- ! Equipment required;
- ! Materials to control possible generation of fugitive emissions from cutting operations;
- ! Methods to seal equipment openings for each equipment type;
- ! Location of interim storage areas and allowable floor loads;
- ! Proposed location and method of installation of all hoisting equipment; and
- ! List of specialized construction equipment.

**C.7.3.2.6 Dismantlement Work Plan, Ventilation, and Containment Subsection**

The Contractor shall provide:

- ! Drawings and Data
  - Indicate materials of construction, sizes, locations, entrances, and egresses that do not allow for breach of the local containment or vestibule, and all other details of local containments and vestibules to be erected;
  - Provide calculations and air flow diagrams for local containment and vestibule ventilation;
  - Submit calculations indicating that a minimum negative pressure of 0.1 inch water gauge or six air changes per hour is maintained in all local containments when the ventilation system is in operation; and
  - All drawings and calculations shall bear the stamp of a P.E. registered in the State of Ohio.

- ! Equipment - Submit vendor information on all accessory ventilation equipment that will be used; and
- ! Provide building-specific work plans on the use of portable HEPA units including replacement of HEPA filters and prefilters.

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**C.7-29**

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**TABLE C.7-3 WASTE MANAGEMENT PLAN**  
**MATERIAL SEGREGATION AND CONTAINERIZATION CRITERIA (MSCC)**  
**SIL0 3 WASTE PROJECT**

TASK	WASTE STREAM	TYPE	PREFERRED CONTAINERS							WASTE SIZE CRITERIA
			Large White Metal Box	Small White Metal Box B-12	Small White Metal Box B-25	ISO	Drum	Roll-Off Box	Dumpster (b)	No Containers
Site Preparation & Mobilization	Cardboard, Paper								I	
	Plastic								I	
	Wood							I		
	Asphalt Dust				E					(1)
	Concrete Dust				E					-
	Strapping								I	-
Demolition Debris Removal	Equipment Insulation							I		(1)
	Floor Tile							G		-
	Light Fixtures							B		(1)
	Plumbing Fixtures							I		(1)
	Cable Trays							B		(2)
	Valves, Fittings							B		(2.5)
	Eye & Safety Showers							I		(1)
	Flex Connections							B		(2)
	Non-Process Piping							I		(2.5)
	Non-Metal Piping							C		(2.5)
	Process Piping							D		(2)
	Ductwork (a)								I	(1)
	Acoustic Ceiling							I		(1)
	Gypsum Material							B		(1)
	Junction Boxes							I		(1)
	Partitions							B		(1)
	Wire/Conduit							I		(1)
	Instrumentation							B		(2)
	Panels	Electrical						B		(1)
	Fluorescent Bulbs				J		J			(6)
	Ballasts	Electrical								-
	Bulbs - Incandescent									-
	Motors	Electrical						I		(1)
	Feeder Cable							B		(1)
								G		(2)

**CATEGORIES:**

- A - Accessible Metals
- B - Inaccessible Metals
- C - Process-Related Metals
- D - Light Gauge Metal
- E - Concrete
- F - Acid Brick
- G - Non-Regulated ACM
- H - Regulated ACM
- I - Miscellaneous Materials
- J - Special Materials

**SIZE CRITERIA:**

- (1) Maximum size = 10' x 4' x 15' (including projections)
- (2) Maximum size = 10' long with 1' projection (maximum height = 15' including projections)
- (3) Maximum size = 6' x 4' x 15'
- (4) Maximum bundles = 8' x 4' x 15'
- (5) Non-Process piping greater than 12" in diameter shall be split in half lengthwise
- (6) Leave intact.

**GENERAL NOTES:**

- Waste streams designated as Category J must be containerized by specific waste stream (e.g., segregated).
- Waste categories shall not be commingled without prior approval of Fluor Daniel Fernald.
- The final disposition of hazardous waste streams will be determined at the time of generation.
- Materials that fail the visible process residue standard in Section C.7.2.4 will be (re)-classified as Category C.
- Category C wastes will be sent to Nevada Test Site for final disposal.
- Categories A, B, D, E, G, H, & I wastes will be sent to the On-Site Disposal Cell for final disposition.
- Categories F & J wastes will be sent to a commercial off-site disposal facility.

**FOOTNOTES:**

- (a) Ductwork that passes visual inspection shall be flattened.
- (b) Material must be bagged prior to placement into dumpster.

**TABLE C.7-3 WASTE MANAGEMENT PLAN  
MATERIAL SEGREGATION AND CONTAINERIZATION CRITERIA (MSCC)  
SILO 3 WASTE PROJECT**

TASK	WASTE STREAM	TYPE	PREFERRED CONTAINERS						WASTE SIZE CRITERIA
			Large White Metal Box	Small White Metal Box	ISO	Drum	Roll-Off Box	Dumpster (b)	No Containers
Equipment Material	Dust Collectors						B		(1)
	Refrigeration Units						B		(1)
	Condensers						B		(1)
	Vaporizers						B		(1)
	Process Pumps						B		(1)
	Tanks						B		(1)
	Fans						B		(1)
	Air Dryer						B		(1)
	Exhaust Fans						B		(1)
	Compressors						B		(1)
	Filters	Metal					B		(1)
	Chillers						B		(1)
	Heat Exchangers						B		(1)
	Controllers						B		(1)
	Transformers						B		(1)
	Holists						B		(1)
	Roll-Up Doors						B		(1)
	Heaters						B		(1)
	Control Centers						B		(1)
	Drinking Fountains						B		(1)
	Vacuum Systems						B		(1)
	Platforms						B		(1)
	Filter Units						B		(1)
	Blowers						B		(1)
	Miscellaneous Tanks						B		(1)
	Air Handling Units						B		(1)
	Miscellaneous Non-Process Equipment						B		(1)
	Bridge Crane						B		(1)
	Substation						B		(1)
	Saws						B		(1)

**CATEGORIES:**

- A - Access to Metals
- B - Inaccess to Metals
- C - Process Related Metals
- D - Light Gauge Metal
- E - Concrete
- F - Acid Brick
- G - Non-Regulated ACM
- H - Regulated ACM
- I - Miscellaneous Materials
- J - Special Materials

**FOOTNOTES:**

- (a) Ductwork that passes visual inspection shall be retained.
- (b) Material must be bagged prior to placement into dumpster.

**GENERAL NOTES:**

- \* Waste streams designated as Category J must be containerized by specific waste stream (e.g., bag/regaled).
- \* Waste categories shall not be commingled without prior approval of Fluor Daniel Fernald.
- \* The final disposition of hazardous waste streams will be determined at the time of generation.
- \* Materials that fail the visible process residue standard in Specification 01517 will be (re)classified as Category C.
- \* Category C wastes will be sent to Nevada Test Site for final disposal.
- \* Categories A, B, D, E, G, H, & I wastes will be sent to the On-Site Disposal Cell for final disposition.
- \* Categories F & J wastes will be sent to a commercial off-site disposal facility.

- SIZE CRITERIA:**
- (1) Maximum size = 10' x 4' x 1.5' (including projections)
  - (2) Maximum size 10' long with 1' projection (maximum height = 1.5' including projections)
  - (3) Maximum size = 6' x 4' x 1.5'
  - (4) Maximum bundles = 8' x 4' x 1.5'
  - (5) Non-Process piping greater than 12" in diameter shall be split in half lengthwise
  - (6) Leave intact

**TABLE C.7-3 WASTE MANAGEMENT PLAN**  
**MATERIAL SEGREGATION AND CONTAINERIZATION CRITERIA (MSCC)**  
**SILLO 3 WASTE PROJECT**

TASK	WASTE STREAM	TYPE	PREFERRED CONTAINERS							WASTE SIZE CRITERIA	
			Large White Metal Box	Small White Metal Box		ISO	Drum	Roll-Off Box	Dumpster (b)		No Containers
				B-12	B-25						
Miscellaneous Building Materials	Metal Wall Studs							B			(1)
	Interior Doors							I			(1)
	Batt Insulation							I			-
	Lead				D						-
	Window Panes/Glass							I			(1)
	Exterior Doors							B			(1)
	Metal Stacks							B			(2)
	Metal Louvers & Stacks							B			(1)
	Downspouts							D			(1)
Clean Building	Wastewater									Holding Tank	-
	Sludge						J				-
	Debris from Surface Removal of Concrete										-
	Floor Debris (General)						J				-
	Sludge Filters							J			-
Structural Steel	Mainframe Members										(2)
	Stairs & Ladders							B		A	(1)
	Floor Decking									A	(1)
	Handrail							B			(2)
	Metal Angle									A	(2)
	Bar Joists							B			-
	Metal Roof & Wall Panels									D	(4)
	Grating										(1)
Concrete Removal	Concrete							B			(1)
	Concrete Block							E			(3)
Demobilization	Polyethylene							E			(3)
	Paint Remover, Mineral Spirits								I		-
	Petroleum & Synthetic Oils & Greases										-
	PPE										-
	Aerosol Cans							J			-

**CATEGORIES:**

- A - Accessible Metals
- B - Inaccessible Metals
- C - Process-Related Metals
- D - Light Gauge Metal
- E - Concrete
- F - Acid Brick
- G - Non-Regulated ACM
- H - Regulated ACM
- I - Miscellaneous Materials
- J - Special Materials

**FOOTNOTES:**

- (a) Deutwork that passes visual inspection shall be flattened.
- (b) Material must be bagged prior to placement into dumpster.

**SIZE CRITERIA:**

- (1) Maximum size = 10' x 4' x 1.5' (including projections)
- (2) Maximum size 10' long with 1' projection (maximum height = 1.5' including projections)
- (3) Maximum size = 6' x 4' x 1.5'
- (4) Maximum bundles = 8' x 4' x 1.5'
- (5) Non-Process piping greater than 12" in diameter shall be split in half lengthwise
- (6) Leave intact.

**GENERAL NOTES:**

- Waste streams designated as Category J must be containerized by specific waste stream (e.g., segregated)
- Waste categories shall not be commingled without prior approval of Fluor Daniel Fernald
- The final disposition of hazardous waste streams will be determined at the time of generation
- Materials that fail the visible process residue standard in Specification 01517 will be (re)classified as Category C
- Category C wastes will be sent to Nevada Test Site for final disposal
- Categories A, B, D, E, G, H, & I wastes will be sent to the On-Site Disposal Cell for final disposition
- Categories F & J wastes will be sent to a commercial off-site disposal facility